IS 7703-3 (1991): Methods of Test for Man-Made Fibre Continuous Filament Flat Yarn, Part 3: Commercial Mass [TXD 1: Physical Methods of Tests]

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IS 7703 ( Part 3 ) : 1991
( *Superseding* IS 1229 : 1957 )

भारतीय मानक

(Reaffirmed 2002)

# कृत्रिम रेशा सतत् तन्तु फ्लैट धागे की परीक्षण पद्धति

भाग 3 व्यापारिक संहति ( द्रव्यमान )

( पहला पुनरीक्षण )

*Indian Standard*

# METHODS OF TEST FOR MAN-MADE FIBRE CONTINUOUS FILAMENT FLAT YARN

**PART 3 COMMERCIAL MASS**

*( First Revision )*

UDC 677·4·071-487·21 : 677·014·332·22



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Price Group 1

## FOREWORD

This Indian Standard ( Part 3 ) ( First Revision ) was adopted by the Bureau of Indian Standards, after the draft finalized by the Physical Methods of Test Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1975 and has now been revised to incorporate changes on the basis of experience gained during its use. In this revision, the title, scope and other details have been modified suitably to cover continuous filament flat yarns of all man-made fibres instead of polyester and polyamide only. This revision thus supersedes IS 1229 : 1957 'Method for determination of commercial weight of continuous filament rayon yarn and acetate yarn, and their mixture'. The following major changes have been effected in this revision:

The principle of determining commercial mass has been modified, and the commercial moisture regain values for various man-made fibres have been included.

In the preparation of this standard due weightage has been given to the testing procedures followed in the country in this field.

This standard forms a part of the series of standards under the title 'Methods of test for man-made fibre continuous filament flat yarn'. Other parts are:

Part 1 Linear density

Part 2 Tenacity and elongation at break

Part 4 Sampling

Part 5 Unevenness percentage

In reporting the results of a test made in accordance with this standard, if the final value, observed or calculated, is to be rounded off it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( *revised* )'.

*Indian Standard*

# METHODS OF TEST FOR MAN-MADE FIBRE CONTINUOUS FILAMENT FLAT YARN

## PART 3 COMMERCIAL MASS

*( First Revision )*

## 1 SCOPE

**1.1** This standard ( Part 3 ) prescribes method for determination of commercial mass of consignments of individual man-made fibre continuous filament flat yarns.

## 2 REFERENCES

**2.1** The following Indian Standards are necessary adjuncts to this standard:

| *IS No.* | *Title* |
|---|---|
| 1324 : 1966 | Glossary of textile terms relating to man-made fibre and fabric industry ( *first revision* ) |
| 6239 : 1991 | Textiles — Man-made fibres — Generic names ( *first revision* ) |
| 6359 : 1971 | Method for conditioning of textiles |

## 3 TERMINOLOGY

**3.1** For the purpose of this standard, the definitions given in IS 1324 : 1966 and IS 6239 : 1991 shall apply.

## 4 PRINCIPLE

**4.1** The net mass of the conditioned yarn at equilibrium with the standard atmosphere for testing may be taken as the commercial mass if agreed to between the buyer and the seller. Alternatively, the commercial mass may be obtained by adding a mass corresponding to the commercial ( standard ) moisture regain to the oven-dry mass of the consignment.

## 5 SAMPLING

**5.1** Samples shall be so drawn as to be representative of the lot.

**5.2** Samples drawn in accordance with the material specification or as agreed to between the buyer and the seller shall be taken as representative of the lot.

## 6 APPARATUS

### 6.1 Balance

The balance shall be of sufficient capacity to weigh the specimen required for the purpose and shall be capable of weighing to an accuracy of 1 mg.

### 6.2 Drying Oven

The oven shall be provided with forced ventilation and shall be capable of maintaining a temperature of 105 ± 3°C. It shall preferably be provided with a weighing balance. In case the drying oven is not provided with a weighing balance, a desiccator with a suitable desiccant and sealed containers of known mass shall be made available.

## 7 PROCEDURE

**7.1** Remove top few layers from each selected sample package and make two skeins of 100 m each and determine the net mass of each at the prevailing atmospheric conditions to an accuracy of 1 mg. Determine the average net mass of the skeins ( $M_n$ ).

**7.2** Place the skeins ( *see* **7.1** ) in the ventilated drying oven maintained at 105 ± 3°C and fed with air from the standard atmosphere. Continue drying until constant mass is attained. The mass shall be taken as constant when the difference between any two successive weighings made at intervals of 20 minutes does not exceed 0·1 percent.

**7.3** Determine the mass of each skein sample without removing it from the oven, with the air flow stopped. In case the drying oven is not provided with a weighing balance, remove the test sample from the oven and transfer it into a weighing container of known mass and close the lid tightly. The transfer of the skein shall be done in as quickly as possible. Cool the skein and the container in a desiccator to room temperature before weighing. Determine the mass of each skein and the container and then deduct from this the tare of the container to find out the oven-dry mass of each skein. All weighings shall be correct to 1 mg. Determine the average oven-dry mass of the skeins ( $M_o$ ).

**7.4** Determine the net mass of yarn of each sample container ( box ) ( $M_c$ ), correct to 1 g, by deducting the mass of the packing material and the corresponding mass of supports of packages and tare of the container from the total mass. The total mass of the sample container represents the mass of the supports of packages, packing material, the yarn and the container in which the packages are packed.

## 8 CALCULATIONS

**8.1** Calculate the commercial mass in kilograms of each selected container by the following formula:

$$\text{Commercial mass of the material of selected container} = \frac{100 + R}{100} \times \frac{M_o}{M_n} \times M_c$$

$R$ = commercial moisture regain percent ( *see* Note ),

$M_o$ = average oven-dry mass of the yarn skeins ( *see* **7.3** ),

$M_n$ = average net mass of the yarn skeins ( *see* **7.1** ), and

$M_c$ = net mass of the material of the selected container ( box ) ( *see* **7.4** ).

NOTE — Unless otherwise agreed to between the buyer and the seller, commercial moisture regain values for various man-made fibres as given below may be used:

| Material | Commercial Moisture Regain Percent |
|---|---|
| ( 1 ) | ( 2 ) |
| Polyester | 0·4 |
| Polyamide | 4·5 |
| Rayon | 11·0 |
| Acetate | 6·5 |
| Acrylic | 1·5 |
| Olefins | Zero |
| Triacetate ( primary ) | 3·5 |
| Glass | Zero |
| Modacrylic: | |
| Class 1 | 0·4 |
| Class 2 | 2·0 |
| Class 3 | 3·0 |

**8.2** Determine the commercial mass of the consignment by the following formula:

$$\text{Commercial mass of consignment} = \text{Net mass of consignment} \times \frac{\text{Commercial mass of the material of the selected container}}{\text{Net mass of the material of the selected container}}$$

## 9 REPORT

**9.1** The report shall include the following:

a) The nature and composition of the material,

b) Net mass of the consignment,

c) Commercial mass of the consignment,

d) Commercial moisture regain value used,

e) Product batch number,

f) Name of the manufacturer, and

g) Month and year of manufacture of the material.

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